NASA Procedural Requirements

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Subject: NASA Program and Project Management Processes and Requirements

Responsible Office: Office of the Chief Engineer

| TOC | Preface | Change_Log | Chapter1 | Chapter2 | Chapter3 | Chapter4 | Chapter5 | Chapter6 | Chapter7 | AppendixA | AppendixB | AppendixC | AppendixD | AppendixE | AppendixF | AppendixG | AppendixH | AppendixI | AppendixJ | AppendixK | AppendixL | AppendixM | AppendixN | AppendixO | ALL |

Chapter 2. Program Management Requirements

2.1 Four-Part Program Management Process

2.1.a As a strategic management structure, the program construct is extremely important within NASA. Programs provide the critically important linkage between the Agency's ambitious goals and the projects that are the instruments for achieving them. Programs vary significantly in scope, complexity, cost, and criticality; however, a properly designed and executed program structure inevitably contributes to sound project management being embraced and practiced at lower levels. To initiate individual programs, a Mission Directorate (or Mission Support Office) shall prepare a program Formulation Authorization Document (FAD).

2.1.b The Program Manager is responsible for ensuring that program goals address the Mission Directorate Strategies and Mission Support Office Functional Leadership Plans and that the program's content, which may contain multiple product lines, addresses those program goals. The Program Manager shall be responsible for recommending to the MDAA (or MSOD) the appropriate product line for each project in his/her program. The Program Manager coordinates program content with the Mission Directorate (or Mission Support Office), provides leadership, and is responsible for the successful accomplishment of the program that meets the needs of the customer. This chapter further delineates the management requirements for programs as described in terms of the four-part management process of paragraph 1.7.1. Program Managers shall meet all requirements outlined in this chapter *irrespective of the size of the program.*

2.1.c The Program Manager is responsible for integration, oversight, and assistance to the program's constituent projects.[18] The program management integration role varies as a function of the level of interdependence of the projects within the program. The following examples illustrate several types of programs. A single-project program (e.g., Cassini) delivers a major capability through completion of one project; in this program type, the Program Manager may also serve in the role of Project Manager and must meet the requirements applicable to both programs and projects. For a program which accomplishes its goals and objectives through completion of multiple, synergistic projects wherein each project individually provides a unique product (e.g., the Mars Program), the Program Manager ensures that the projects collectively contribute to an integrated program objective. For programs that deliver an integrated system-of-systems composed of multiple interdependent projects (e.g., International Space Station), end-to-end system integration and delivery is performed at the program level (i.e., the sum of the project deliveries does not produce the system in the absence of program integration). The program management integration role is more limited in other types of programs where the degree of interdependence is less. Examples are Discovery, in which each project stands alone in contributing to a very broad program objective; New Millennium, in which the projects are interdependent in contributing to technology validation but are not synergistically integrated; and technology programs, which can provide new capabilities for many missions. For basic and applied research programs, the integration occurs through the infusion of new knowledge, data applications, and technological advances. The Program Manager ensures that such advances influence multiple programs.

[18] In this document, the term *project* should be taken to mean project or portfolio, the latter label being preferred for

the basic and applied research product line.

2.1.d The Program Manager is responsible for the program safety, security, cost, schedule, technical performance, risk, and other management requirements contained in this chapter. The Program Manager should integrate these areas and utilize the experts from line or functional organizations to assist in program formulation and implementation.

2.1.e The Program Manager should develop a cooperative and performance-oriented team that includes the Project Managers. It is imperative that team members be mutually supporting and empower each other to do their functions with full and open communication.

2.2 Program Formulation

2.2.1 **Purpose:** The purpose of program formulation activities is to establish a cost-effective program that is demonstrably capable of meeting Agency and Mission Directorate (or Mission Support Office) goals and objectives. The program Formulation Authorization Document (FAD) authorizes a Program Manager to initiate the planning of a new program, and to perform the analyses required to formulate a sound Program Plan. A FAD template is found in Appendix A. The PCA is the agreement between the MDAA (or MSOD) and the NASA Deputy Administrator that authorizes transition from formulation to implementation. A PCA can be considered an executive summary of the Program Plan. A PCA template is found in Appendix B.

2.2.2 **Requirements:** During program formulation, the Program Manager, once selected, shall:

2.2.2.a Prepare a Program Plan.

1. In the Program Plan, the Program Manager shall define and document an affordable program architecture along with the success criteria and performance metrics. (A Program Plan template is provided in Appendix C.) Specifically, the Program Manager shall:

   i. Ensure that top-level requirements, including success criteria, for each constituent project are defined in coordination with the Mission Directorate (or Mission Support Office) and documented in the Program Plan.
   ii. Ensure the validated high-level requirements and program success criteria flow down to projects or portfolios. Program Managers are required to demonstrate this linkage (traceability) while formulating and implementing a program, and this linkage will be closely monitored when the Program Plan is reviewed.
   iii. Prepare estimates of yearly New Obligational Authority (NOA) consistent with top-level program requirements, and identify the civil service workforce so as to enable full cost estimates.
   iv. Prepare an overall program timeline with key milestones related to the accomplishment of program goals and objectives. When applicable, the timeline should provide guidance and a schedule for the announcement of new project (or research) opportunities.
   v. Document synergistic activities with other NASA, industry, academia, and international programs.
   vi. Prepare and implement a comprehensive Safety and Mission Assurance (SMA) Plan early in program formulation to ensure program compliance with all regulatory safety requirements from OSHA and all NASA Safety and Mission Assurance requirements such as mishap reporting and investigation, range safety, software safety and assurance, and human rating requirements. The importance of up-front safety, reliability, maintainability, and quality assurance requirements should be emphasized in all program activities.

2. Beginning early in program formulation, the Program Manager shall work with the Office of External Relations, the Deputy Chief Acquisition Officer and the MDAA (or MSOD) to identify potential non-NASA partners and necessary agreements for international or interagency cooperation.

   i. All activities and documentation shall be consistent with policy directives and with Mission Directorate (or Mission Support Office) and Agency-level agreements with the partners.
   ii. All program-enabling commitments shall be obtained prior to program approval for implementation.

3. The Program Manager shall evaluate lessons learned from existing and previously executed programs and projects to identify applicable lessons for use in program planning and execution.
4. Early in program formulation, the Program Manager, in consultation with the MDAA (or MSOD), shall recommend a Technical Warrant Holder (TWH). The NASA Chief Engineer selects the TWH.

2.2.2.b Create a program organizational and financial structure.

1. The Program Manager shall build a program organizational structure that assigns clear lines of responsibility,

authority, and accountability to specific Centers, Project Managers, partners, advisory groups, and oversight boards.

2. Working in close cooperation with the OCFO, the Program Manager shall be responsible for creating financial management structures that comply with budget and accounting standards established by that Office.

2.2.2.c Develop a program technical approach.

i. As applicable, the Program Manager shall identify scientific and engineering research and development strategies, develop constituent project (systems and operations) concepts, acquisition strategies, technology strategies, commercialization plans, agreements (e.g., space operations service agreements, launch services agreements, safety and mission assurance agreements), and logistics concepts and incorporate them into the Program Plan. The most important aspect of this formulation activity is conducting a thorough analysis of alternatives (AoA), relying on architecture frameworks, program-level systems engineering, design reference mission analysis, and other formal techniques.

ii. The Program Manager shall establish the program's methods for advanced technology insertion and validation, safety and mission assurance, environmental impact assessment, records and data management and distribution, physical and information security and program protection, and risk management and incorporate them into the Program Plan.

iii. The Program Manager shall incorporate the security considerations in NIST Special Publication 800-64, "Security Considerations in the Information System Development Life Cycle," in the lifecycle of all Information Technology related Programs.

2.2.2.d Develop a continuous risk management process

1. The Program Manager shall develop and implement a continuous risk management process (that includes integrated risk management planning for all risks associated with program safety, cost, schedule, and technical performance) and document it in a program Risk Management Plan.

i. The Program Manager shall begin the process with risk identification and an assessment of program constraints, which defines the acceptable risks. Areas of potential program risks include, but are not limited to: mission success criteria; development schedule; budget limits; launch window and vehicle availability; international partner participation; critical single source suppliers; security; environmental concerns; human space flight safety issues; fail ops/fail safe requirements; safe and reliable operations; and the amount and type of testing.

ii. The Program Manager shall follow the NASA Continuous Risk Management (CRM) Process, shown as Figure 2-1 and Figure 3-2 in Chapter 3.

iii. The program Risk Management Plan shall describe periodic risk reviews, system safety, quantitative risk assessments, operations risk management, risk-based acquisition management, and information management systems for problem reporting, surveillance reporting, supportability data, and trends analyses.

2. All risks shall be documented and communicated throughout the program's life cycle.

3. The results of the risk management process shall be incorporated into the final technical products.

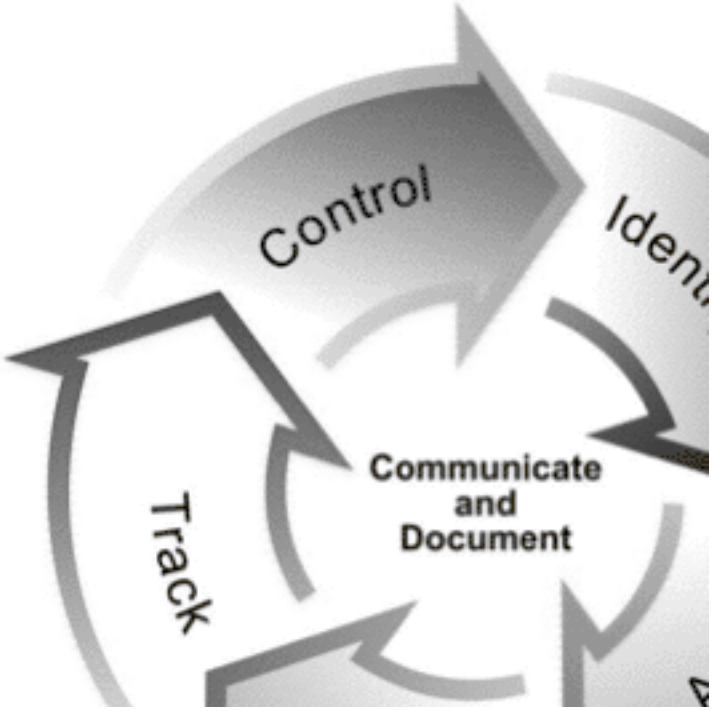

Figure 2-1. The NASA Continuous Risk Management Process

2.2.2.e Develop a closed-loop problem tracking process that includes problem or anomaly reporting, problem analysis, and corrective action.

1. The Program Manager shall develop a protocol to review past performance to determine the incidence of identical or related anomalies.
2. The Program Manager shall develop an escalation procedure (to inform higher levels of management) based on mission criticality.
3. The Program Manager shall develop a closeout process for root cause determination, anomaly mitigation, and recurrence control.
4. The Program Manager shall evaluate and disposition Government-Industry Data Exchange Program (GIDEP) Alerts, Safe-Alerts, Problem Advisories, Agency Action Notices and NASA Advisories, and shall exchange significant problem and nonconforming item data with other activities and with GIDEP.

2.2.2.f Present the Program Plan for approval by the MDAA (or MSOD).

1. Prior to the program Non-Advocate Review (NAR), the Program Manager shall secure Program Plan concurrence by the cognizant MDAA (or MSOD) and from those Center Directors committing support to the program.
2. For single-project programs, the Program Manager shall either prepare both a Program Plan and a Project Plan, or integrate key elements of the Program Plan with all required elements of the Project Plan. The resultant Program Plan should fully meet the requirements described for both the program and project plans, including adequate linkage to the Agency Vision, goals, and objectives.

i. For the purposes of compliance with this document, formulation and implementation activities for single-project programs shall follow the requirements outlined for projects.
ii. A Formulation Authorization Document (FAD) and a Program Commitment Agreement (PCA) shall be required for a single-project program.

2.2.2.g Support the Mission Directorate or the (Mission Support Office) in the preparation of a Program Commitment Agreement, based on the content of the Program Plan.

2.3 Program Approval

2.3.1 **Purpose:** The program approval process is an ongoing effort by senior NASA management to determine the

program's readiness (at key milestones) to continue with formulation, or to proceed to or continue with implementation.[19] To secure program approval, the Program Manager must prepare (or revise) key program management documents (PCA, Program Plan, etc.) and submit them to the Agency PMC at a decision review meeting.

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[19] For existing programs, re-approval may be required during implementation as a result of proposed changes to the PCA and Program Plan based on budgetary, technical, or institutional considerations.

2.3.2 The term "ongoing" is used in paragraph 2.3.1 because the number of key milestones at which decision reviews are required varies from program to program. The number and focus of decision reviews depends on the program's predominant product line and development strategy. Non-flight programs will have at most one decision review--the NAR--occurring between formulation and implementation. Programs dominated by flight systems and ground support projects will have at least two decision reviews--the preliminary NAR occurring during formulation and the NAR. To avoid unnecessary duplication of review events, these decision review meetings are generally timed to coincide with the program's first project preliminary NAR and NAR. For all programs that use evolutionary acquisition there are two additional decision reviews--the Concept Decision Review, occurring before formal formulation activities start, and the Production Review, occurring during implementation before significant production activities start. Table 2-1 shows the required program decision reviews.

2.3.3 NASA will adapt its program evaluations and management accountability hierarchy to accommodate programs that are an evolving system-of-systems. Specifically, when a Mission Directorate uses an evolutionary acquisition approach, decision reviews held by the Agency PMC will occur at the "spiral level," will include the major program elements (i.e., projects), and will be conducted concurrently with the spiral decision reviews. Because this is a new approach to program approval, NASA senior management plans to revisit the number of decision review meetings after some experience has been gained.

Program	Concept Decision Review	Preliminary NAR	
Basic and Applied Research (separate program)			
Advanced Technology Development (separate program)			
Flight Systems and Ground Support (standard)		Yes	
Flight Systems and Ground Support (evolutionary acquisition)	Yes	Yes	
Institutional (real property)			

Table 2-1. Program Decision Reviews

2.3.4 Requirements: In support of Agency PMC decision review meetings during program approval:

2.3.4.a The Program Manager shall support evaluation by IPAO in accordance with the program evaluation process. (See paragraph 2.5.8 for more detailed requirements.)

2.3.4.b The Program Manager shall prepare a program readiness overview briefing for presentation at the Agency PMC milestone decision review meeting that includes a summary of the program, the status of program documentation and products, concurrence of the TWH on technical requirements (including all variances), and significant risks, all appropriate to the level of program maturity.

2.3.4.c The Program Manager shall prepare (and/or submit) the program documents and products described in Table 2-2. For programs that have a preliminary NAR, an updated FAD is not needed for the NAR.

2.3.4.d At that meeting, the IPAO results and findings, including an Independent Cost Analysis (ICA), are also presented. The Program Manager shall then follow with a presentation of responses to the IPAO findings.

2.3.5 When all presentations are concluded, the Agency PMC convenes an executive session to discuss the material presented and determines whether to recommend approval to the Deputy Administrator. A positive recommendation may be unconditional, or conditional on the Program Manager completing assigned action items, some of which address IPAO findings from the NAR. A negative recommendation by the Agency PMC results in direction to the Program Manager to either address the deficiencies or to terminate the program. When the Deputy Administrator signs the PCA, the program is approved for implementation, and the program's NAR Baseline is formally established.

Key Management Document or Product	Concept Decision Review	Preliminary NAR	
Program FAD	Draft	Yes, if applicable	Yes,
PCA	N/A	Preliminary	

Table 2-2. Key Program Documents and Product Maturity by Decision Review

2.4 Program Implementation

2.4.1 Implementation of programs requires many actions from the Program Manager. The Program Manager should work closely with Mission Directorate (or MSOD) personnel and with the OCFO to coordinate plans, budgets and schedules. During program implementation, the Program Manager performs and orchestrates the following activities:

a. Program control.
b. Program advocacy.
c. Program integration.

2.4.2 Program Control

2.4.2.1 Purpose: Through this activity the Program Manager provides direction and exercises control over the program. The purpose of this activity is to ensure that program implementation is conducted in an effective manner, considering safety, risk, performance, cost, schedule, and quality commitments in the Program Plan. This activity provides management oversight of all aspects of the program, especially oversight and review of the constituent projects. This activity ensures the collection, tracking, reporting, and management of the program according to agreed-upon metrics.

2.4.2.2 Requirements: During implementation, the Program Manager shall:

2.4.2.2.a Have a signed PCA before conducting activities associated with program or program element (project or portfolio) implementation.

2.4.2.2.b Demonstrate a comprehensive program control function.

1. The program control function shall operate to ensure that cost, schedule, safety, and performance commitments made at the program and project levels are demonstrable in terms of agreed-upon metrics.
2. The Program Manager shall focus attention on assuring that projects are operating within the framework of the approved Program Plan.
3. The Program Manager shall monitor any program element reserves held at the program level and distribute them, as needed, to meet program goals and objectives.

2.4.2.2.c Prepare and maintain detailed budgets, work authorizations, plans, and schedules.

1. The Program Manager shall provide a copy of the signed PCA to the OCE and OCFO.
2. The Program Manager shall support the Mission Directorate (or Mission Support Office) in updating the PCA through a revision when new content is added to the program (e.g., the creation of a new project). The revision shall be noted in the PCA change log.

3. The Program Manager shall evaluate the need for modifications of the Program Plan and the PCA due to changes in projects and activities within the program. Programs are usually long-lived constructs and should not require extensive modification during implementation. However, external funding changes or strategic shifts within the Agency can generate modifications to the PCA. Specifically, for ongoing programs:

   i. The Program Manager shall support the Mission Directorate (or Mission Support Office) in updating the PCA through a modification when budget changes greater than 20 percent (20%) in a given year, or ten percent (10%) within a five-year horizon occur.
   ii. The Program Manager shall support the Mission Directorate or (Mission Support Office) in preparing the PCA modifications and documenting them in the PCA change log. The Mission Directorate will approve the modifications and take the modified PCA to the Agency PMC for an approval recommendation to the Deputy Administrator.
   iii. The Program Manager shall support the Mission Directorate (or Mission Support Office) in preparing a briefing for the Agency PMC that describes factors driving the modification and shall support the briefing if requested. When the Deputy Administrator signs the modified PCA, the program modification is approved.

4. Budget data shall reflect, at all times, the full cost of implementing all aspects of the program. (For more information on full cost and practices, see Volume 7 of the NASA Financial Management Requirements.)
5. The Program Manager shall prepare and maintain a detailed schedule of program milestones and major planned events. Program Managers are encouraged to identify alternative development paths in order to maximize the probability of success.
6. The Program Manager shall review and approve constituent Project Plans.

2.4.2.2.d Oversee acquisition efforts.

1. The Program Manager shall ensure that all acquisition efforts[20] and other transactions are implemented in accordance with Federal law and regulations (including the FAR or OMB Circulars, as applicable), and the NASA FAR Supplement, NASA directives, and the Program Plan.
2. The Program Manager shall ensure that standards and requirements flow down to external parties (i.e., contractors, grantees, and non-NASA parties to Space Act and other agreements and non-procurement instruments).

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[20] This includes contracts, grants, cooperative agreements, interagency agreements, Space Act Agreements, and any effort not performed by NASA installation employees.

2.4.2.2.e Conduct an integrated continuum of reviews. The Program Manager shall conduct the internal program reviews during implementation as specified in the Program Plan.

2.4.2.2.f Disposition all risks before delivery to operations (or the equivalent for a technology program).

2.4.2.2.g Support the Mission Directorate (or MSO) in preparing material for Quarterly Status Reviews (QSRs) to the Agency PMC.

2.4.2.2.h Periodically evaluate the performance of Project Managers and their teams.

2.4.3 Program Advocacy

2.4.3.1 Purpose: The purpose of this activity is to proactively consult and involve customers in program decision forums during implementation to ensure customer satisfaction with delivered products and services within budget and schedule commitments. Program advocacy also includes external outreach to the wider set of stakeholders. The Program Manager works with the Mission Directorate (or Mission Support Office) to advocate for the totality of the program, including advocacy for constituent projects. The MDAA (or MSOD) and Program Manager should ensure an effective interface across Government agencies and international partners, and with the political stakeholders. In completing the education and public outreach plan, the Program Manager ensures integration with the Agency education strategic goals.

2.4.3.2 Requirements: During implementation, the Program Manager shall:

2.4.3.2.a Advocate and promote customer involvement in the implementation of the program to assess progress against commitments.

2.4.3.2.b Produce and execute a plan for education and public outreach by working with Mission Directorate education leads and the NASA Office of Education.

2.4.4 Program Integration

2.4.4.1 Purpose: This activity develops and integrates the overall implementation approach and provides management oversight of all aspects of the program.

2.4.4.2 Requirements: During implementation, the Program Manager shall:

2.4.4.2.a Maintain the continuity of requirements by ensuring that requirements are fully traceable from Agency vision and goals down through program requirements and top-level project requirements.

2.4.4.2.b Ensure that the program is being implemented in a cost-effective manner by continuing to conduct architecture trades, technology assessments, mission analyses, and infrastructure and operational analyses that help structure program-level investments for maximum return.

2.4.4.2.c Ensure that all investment areas (product lines) associated with the program are being managed in an integrated manner so that changes in one program investment area are reflected in all other related investment areas.

2.4.4.2.d Ensure that all cross-cutting management elements of the program (e.g., safety, technology strategy, risk management) are being implemented in constituent projects in accordance with the Program Plan.

2.4.4.2.e Identify and secure facilities, infrastructure, equipment (including GFE), materials, supporting personnel, and services that are required to support multiple projects within the program.

1. The Program Manager shall negotiate agreements with support providers, as needed.
2. For those products requiring transfer of custodial responsibility, the Program Manager shall ensure that acceptance/turnover activities, licensing, and documentation are addressed.
3. The Program Manager shall ensure that Project Plans account for the disposition of assets (orbital and other) after the end of their useful life.
4. The Program Manager shall manage all salvageable assets (e.g., spares) remaining at the end of a constituent project's life cycle.

2.5 Program Evaluation

2.5.1 NASA's leadership places a high value on independent review of programs and projects as an unbiased quality check of the engineering and management efforts.

2.5.2 Purpose: The evaluation process utilizes independent review teams composed of knowledgeable, independent experts from outside the advocacy chain of the program. Evaluation supports the approval process by providing findings and supporting data needed to help the Agency PMC decide whether to proceed to the next program phase. Evaluation during formulation assesses whether a program supports the Agency Vision and strategic goals, and whether that program can be successfully conducted within available resources and applicable constraints. Evaluation during implementation assesses whether a program is contributing to the Agency Vision and goals, and is being successfully executed according to the Program Plan. Evaluation also provides findings to enhance the program's technical and programmatic performance.

2.5.3 These evaluations are generally planned to minimize disruptions to the program and avoid unnecessary duplication of review events. In keeping with that policy, NASA will adjust its program evaluations to accommodate programs that are an evolving system-of-systems.

2.5.4 Requests for external audits and assessments of programs may come from the Congress, the NASA Inspector General, the Government Accountability Office (GAO), advisory groups such as Science Advisory Committees, and other similar sources. When requested, the OCE will coordinate responses to external review requests, work in concert with the MDAA (or MSOD) to disposition such requests, and coordinate the scheduling of such activities with the Program Manager and Agency PMC.

2.5.5 Special-purpose independent reviews (e.g., Termination Review) will be conducted when directed by the Agency PMC or Mission Directorate. Requests for special purpose reviews may come to the Agency PMC from customers, line organizations, or others. Elements such as the anticipated inability of a program to meet its commitments, an unanticipated change in Agency strategic planning, or an unanticipated change in the NASA budget may initiate such reviews.

2.5.6 For basic and applied research programs, a Program Implementation Review (PIR) will be held every three years, and conducted consistent with NPR 1080.1, NASA Science Management. All other programs will have a biennial (nominally every two years) PIR by the IPAO throughout implementation at a time designed to minimize disruptions to the program (e.g., at scheduled program milestone reviews). The IPAO PIR is designed to ensure that

the program's scope and content remain tightly linked to the Agency Vision and goals, that the program's implementation follows the intent of the Program Plan and that the program is meeting the NAR Baseline performance, cost, and schedule commitments. The IPAO reports the results of such periodic PIRs to the Agency PMC. For basic and applied research programs, the results of the PIRs are also reported to the Mission Directorate Science Management Council (SMC) or equivalent.

2.5.7 For all programs, the general process flow leading to each Agency PMC decision review and PIR is as follows. The Program Manager schedules program site field review events with the IPAO. During the IPAO site field review, the Program Manager presents a detailed program briefing, which demonstrates the program's readiness to continue. This briefing includes a program cost estimate and documentation/data required to conduct an Independent Cost Analysis (ICA). At the end of the IPAO site field review, the IPAO provides a preliminary verbal outbrief to the Program Manager. The IPAO prepares an initial briefing, which includes an Independent Cost Analysis (ICA), and briefs the Program Manager. The Program Manager reviews the facts, assumptions, and findings of the initial IPAO briefing, and provides a formal response to the IPAO. The IPAO and Program Manager brief the cognizant Center management (if applicable) and the Mission Directorate on the findings and program responses. The IPAO prepares a final briefing and issues it to the Program Manager, the Directorate, and to the Agency PMC members. After the final briefing is issued, the Program Manager and the IPAO brief the Agency PMC.

2.5.8 Requirements: To accomplish the ongoing program evaluation process, the Program Manager shall:

2.5.8.a Plan program team and schedule resources to support Independent Assessment (IA) for all required program decision reviews and Program Implementation Reviews (PIRs) (nominally every two years after the NAR approval[21]). For initial planning purposes, the Program Manager should consult Table H-2 in Appendix H. The program's planning schedule may be modified through negotiation with the IPAO.

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[21] For basic and applied research programs, Program Implementation Reviews occur every three years.

2.5.8.b Comply with the evaluation Terms of Reference (ToR) for all independent reviews.

1. The ToR is prepared by the IPAO through negotiation with the MD (or MSO) point-of-contact. The ToR is approved by the OCE and the MDAA (or MSOD). The ToR specifies the details of conducting site field review events, including the schedule, deliverable items, and areas of program risk. If the MD (or MSO) point-of-contact and the IPAO cannot agree on the ToR scope and content, the OCE shall be the final decision authority.
2. The final schedule shall be documented in the evaluation ToR.

2.5.8.c Prepare program briefings and material demonstrating the program's readiness to continue, and present them at the IPAO site field review. These briefings shall include a program cost estimate. (PIRs are designed to measure program performance and compare that performance against the Program Plan. Consequently, the biennial PIR focuses on program activities and generally does not delve into project operations. The Program Manager should, however, plan for some level of project-level analysis in order to assess the delivery of products and services according to the agreed-upon metrics in the Program Plan.) The Program Manager should consult Table H-1 in Appendix H for other assessment criteria.

2.5.8.d Review facts, assumptions, and findings of the initial IPAO briefing, and provide a formal response to the IPAO.

2.5.8.e Comply with external requests for evaluation and audit (e.g., Congress, OMB, NASA Inspector General, GAO, etc.).

2.5.8.f Support any additional independent reviews or technical assessments that may be required during formulation and implementation as directed by the Administrator, Agency PMC, MDAA, MSOD, the OCE (including the NESC), or the Office of Safety and Mission Assurance. The Program Manager shall provide formal responses to action items/recommendations from these reviews for closure.

2.5.8.g Ensure that program engineering data related to failures, anomalies, evaluations, problems, incidents, and Requests for Action (RFAs) are captured, retained, and made available to the TWH and NESC upon request.

2.5.8.h Provide support for a Safety and Mission Assurance Readiness Review (SMARR) prior to any launch or safety critical event or other activity selected by the Chief SMA Officer.

| TOC | Preface | Change_Log | Chapter1 | Chapter2 | Chapter3 | Chapter4 | Chapter5 | Chapter6 | Chapter7 | AppendixA | AppendixB | AppendixC | AppendixD | AppendixE | AppendixF | AppendixG | AppendixH | AppendixI | AppendixJ | AppendixK | AppendixL | AppendixM | AppendixN | AppendixO | ALL |

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